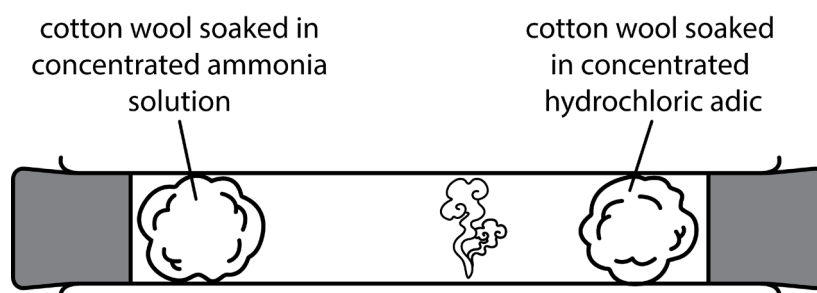


Name:

Class:



This apparatus is used to demonstrate the movement of ammonia gas and hydrogen chloride gas in a glass tube. Some cotton buds are soaked with both solutions.



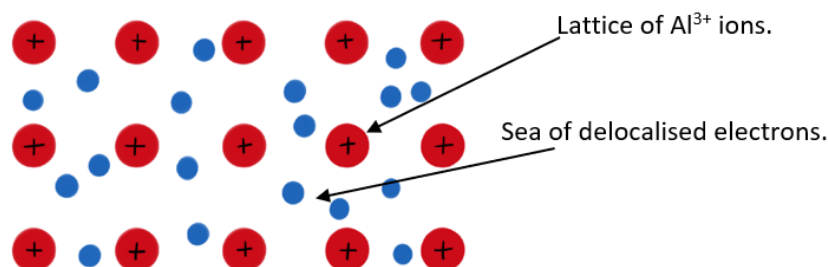
Where the ammonia gas and hydrogen chloride gas meet a small cloud of ammonium chloride gas forms. Explain **why** this cloud forms closer to the bud with hydrochloric acid?

An explanation that includes the following:

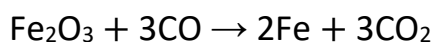
- Ammonia (particles / gas) has a lower relative formula mass or lower weight. Ammonia is lighter (than hydrogen chloride).
- (Therefore) ammonia diffuses / moves faster

Allow converse statements for hydrogen chloride.

Draw a **labelled** diagram to show the arrangement of the particles involved in the bonding within a metal.



Explain which element is reduced in this reaction.



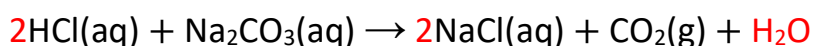
Iron/Fe has been reduced as it has gained electrons from carbon monoxide/ CO.

State the conditions of the Haber process.

- **Temperature:** 450 °C
- **Pressure:** 200 atmospheres of pressure
- **Catalyst:** Iron catalyst.

All three conditions are required.

Complete and balance the following equation:



Zinc reacts with oxygen to produce zinc oxide. The theoretical maximum yield of zinc oxide was 1.86 g. The actual yield was 1.63 g. Calculate the percentage yield of zinc oxide.

$$\text{Percentage yield} = (\text{actual yield} \div \text{theoretical yield}) \times 100$$

$$\text{Percentage yield} = (1.63 \div 1.86) \times 100$$

$$\text{Percentage yield} = 87.7 \%$$